

DOCKET NO: 293717US0PCT

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :
AKIHIKO FUJII, ET AL. : EXAMINER: KING, FELICIA C.
SERIAL NO: 10/587,258 :
FILED: JULY 26, 2006 : GROUP ART UNIT: 1794
FOR: COFFEE DRINK COMPOSITION :

APPEAL BRIEF

SIR:

The following is an appeal of the examiner's final rejection of December 28, 2009 of claims 1-8 as obvious. A Notice of Appeal along with a one-month extension of time was timely filed on April 28, 2010.

(i) Real Party In Interest

The real party in interest is Kao Corporation, Tokyo Japan, by assignment recorded at reel/frame 020709/0630-33.

(ii) Related Appeals And Interferences

Appellants identify their contemporaneous appeal of the decision of examiner King issued in U.S. 10/589,609. Appellants, appellants' legal representative and the assignee are not aware of any other related appeals and interferences which will directly affect or be directly affected, or have a bearing on the Board's decision in the pending appeal. Any copies of decisions rendered by a court or the Board, if any, in any proceeding identified would be attached as related proceedings appendix (x).

(iii) Status Of Claims

Appellants' state the status of all the claims in the proceeding as follows:

Claims 1-8 are rejected and active in this application and are herein appealed.

No claims have been identified as allowed or confirmed.

No claims have been identified as withdrawn.

No claims have been identified as objected to.

No claims have been canceled.

(iv) Status Of Amendments

No amendment after final rejection has been requested. A copy of the claims as herein appealed is attached as appendix (viii).

(v) Summary Of Claimed Subject Matter

The claimed invention is directed to

1) a coffee composition having a hydroxyhydroquinone content of from 0 to 0.00005 wt. % (page 2, lines 3-6) (claim 1);

2) a coffee composition, characterized in that in analysis by high performance liquid chromatography, the composition has no substantial peak within a range of a relative retention time from 0.54 to 0.61 with respect to gallic acid used as a reference substance (page 2, lines 15-22) (claim 2);

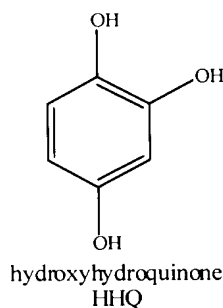
3) a soluble coffee composition having a hydroxyhydroquinone content of from 0 to

0.001 wt. % page 2, lines 7-10) (claim 3);

4) a packaged beverage having, filled therein, a coffee composition having a hydroxyhydroquinone content of from 0 to 0.00005 wt. % (page 2, lines 11-14) (claim 4); and

5) a packaged beverage having a coffee composition filled therein, characterized in that in analysis by high performance liquid chromatography, the composition has no substantial peak within a range of a relative retention time of from 0.54 to 0.61 with respect to gallic acid used as a reference substance (page 2, lines 15-22) (claim 5).

Coffee compositions are consumed around the world. While it has been recognized that hydrogen peroxide is a component of roasted coffee, method of removal have not been effective at reducing *in vivo* hydrogen peroxide levels. Applicants have discovered that hydroxyhydroquinone (hereinafter HHQ)



has an effect of generating hydrogen peroxide *in vivo* and that a coffee composition from which an HHQ content has been reduced does not accelerate the production of hydrogen peroxide *in vivo*. Such a coffee composition is nowhere disclosed or suggested in the cited art of record.

Claims 1 -5 are the only independent claims involved in this appeal, whose subject matter is defined above.

No means plus function or step plus function as permitted by 35 U.S.C. 112, sixth paragraph are used and therefore none are identified.

(vi) Grounds Of Rejection To Be Reviewed On Appeal

1) The rejection of claims 1, 2, 6 and 7 under 35 U.S.C. §103(a) over Stelkens GB 354,942 and Sosuke et al JP 6-315,434, is presented for review.

2) The rejection of claims 3 and 8 under 35 U.S.C. §103(a) over Stelkens GB 354,942 and Sosuke et al JP 6-315,434 and Schlichter U.S. 3,615,666 is presented for review

3) The rejection of claims 4 and 5 under 35 U.S.C. §103(a) over Stelkens GB 354,942 in view of Sosuke et al JP 6-315,434 and Behrman U.S. 2,430,663 is presented for review.

(vii) Argument

The examiner has committed reversible error in concluding the claimed invention to be obvious over the cited references as a coffee composition having an HHQ content of 0 to 0.00005 wt.% HHQ or no substantial HPLC peak corresponding to a HHQ retention time, as such and HHQ content is not inherent to the cited references and there is no relied upon reference which identifies HHQ as poisonous matter to be removed.

Stelkens has been cited for a disclosure of treatment of infusions of tea and coffee with activated carbon such that caffeine and other distasteful constituents are adsorbed (page 1, lines 74-84). Page 1, lines 8-11 generally identifies the technology as related to removing **poisonous**

matter from infusions of tea and coffee. HHQ is not identified as either poisonous matter or as a distasteful constituent. Treatment with activated carbon results in a decrease in the **total nitrogenous content** (43% reduction) of the coffee infusion (page 2, lines 17-28). HHQ is not a nitrogenous compound. Thus, Stelkens identifies a process in which coffee and tea extracts are treated with an adsorbent but does not identify or provide any motivation to remove HHQ.

The examiner cites to Sosuke JP '434 for a disclosure of filtering coffee through adsorbents such as activated carbon near 30-100Å, coconut husk activated carbon near 10 Å in size or a zeolite around 1-5 Å in size (page 2 of official action).

The examiner reasons that it would have been obvious that mixing the coffee grounds of Stelkens with the activated carbon of Sosuke would reduce the levels of poisonous substances such as HHQ.

The rejection of claims 1, 2, 6 and 7 under 35 U.S.C. §103(a) over Stelkens GB 354,942 and Sosuke et al JP 6-315,434 and of claims 4 and 5 under 35 U.S.C. §103(a) over Stelkens GB 354,942 in view of Sosuke et al JP 6-315,434 and Behrman U.S. 2,430,663

The examiner has separately rejected claims 4 and 5 based on the “packaged” feature of the claims citing Behrman. However, a more convenient characterization would be to group claims 1 and 4 together based on a quantified HHQ content and claims 2 and 5 together based on the absence of a substantial peak corresponding to HHQ by HPLC. As such, appellants separately argue claims 1 and 4 and claims 2 and 5.

Claims 1, 4, 6 and 7

The Examiner Has Erroneously Ignored The Evidence Of Insufficient HHQ Removal

Appellants have provided the examiner with evidence of the inherent level of HHQ removal from her suggested combination.

The Ohminami declaration of April 24, 2009 reported the HHQ content by processing coffee according the technique disclosed in Stelkens in which ground coffee and zinc chloride activated carbon were mixed in boiling water and filtered. The content of HHQ was 0.00112 wt.%, in excess of the claimed upper limit of 0.00005 wt.%.

The Ohminami declaration of September 23, 2009 reported the HHQ content by processing coffee according to the technique disclosed in Sosuke JP '434 in which ground coffee was subjected to drip extraction then passed through an activated coconut husk carbon¹. The content of HHQ was 0.000948 and 0.000844 wt. % respectively depending on the amount of carbon used. Both amounts exceeded the claimed upper limit of 0.00005 wt.%.

The Ohminami declaration of March 9, 2010 reported the HHQ content by processing coffee according the technique disclosed in Stelkens using an activated carbon as disclosed in Sosuke JP '434 in which ground coffee and coconut husk activated carbon were mixed in boiling water and filtered.

Using the treatment conditions of Stekens and a coconut husk 1-5Å of pore size similar to that disclosed in JP '434 Mr. Ohminami prepared coffee compositions by intimate contact

¹ During the preparation of this appeal, appellants identified an error in Mr. Ohminami's declaration where activated carbon Shirasagi WH2c 42/60 was erroneously identified as derived from corn husk when a coconut husk activated carbon should have been identified.

for a **period of five minutes**. This **contact time is the same** as disclosed in Stelkens using the **same proportions** as described in Stelkens. The data is summarized below:

	Without activated carbon (reference)	With activated carbon
Content of HHQ	0.00399 wt%	0.00227 wt%
HHQ residual ratio	100 %	56.9 %
Content of chlorogenic acid	0.72271 wt%	0.51385 wt%
Chlorogenic acid residual ratio	100 %	71.1 %
Ratio of HHQ / chlorogenic acid	0.55 %	0.44 %

Using the same contacting conditions of five minutes and proportions as described by Stelkens and using a coconut husk activated carbon similar to that disclosed in Sosuke, the combination as proposed by the examiner, an HHQ content as claimed is not realized. Furthermore, there was a detectable HPLC peak corresponding with an HHQ retention time. Using the conditions described by the examiner, an HHQ content which is more than 45x greater than the claimed maximum is realized. Accordingly, the claimed coffee composition containing from 0-0.00005 wt. % of HHQ is not obvious.

Thus, the examiner has erroneously ignored the **evidence** of the lack of insufficient HHQ removal to achieve the claimed content using 1) the technique of Stelkens, 2) the technique of Sosuke JP '434 and 3) the technique of Stelkens with the activated carbon of Sosuke JP '434.

Since none of the techniques cited by the examiner inherently produce an HHQ content as claimed, the examiner's conclusion as the obviousness of the claimed HHQ content is in error and her decision must be reversed.

HHQ Is Not Identified As A Poisonous Substance

When presented with appellant's evidence, the examiner insists that her rejection is based on obviousness and that "it would have been obvious to treat the coffee with coconut husk activated carbon until a desired amount of poisonous substances were removed."

The examiner's reasoning presupposes that HHQ is recognized as a poisonous substance. The examiner has erroneously concluded that HHQ is a poisonous substance to be removed by activated carbon treatment when neither reference relied upon even discloses HHQ. Quite simply, in the absence of a disclosure that HHQ is a poisonous substance, there would be no motivation to remove HHQ from a coffee composition. Taken to the extreme, using the examiner's basis to remove HHQ since it merely exists in the coffee bean extract, completely pure water would be obvious from the coffee extracts since it would have been obvious to remove anything which is in coffee extract. Such reasoning is absurd. The claimed HHQ content does not inherently arise from using the combined techniques described in the art and there simply is no motivation in the cited art to remove HHQ. Thus, the examiner has erroneously concluded that there is motivation to remove HHQ.

For the reasons described above, claim 4 is also patentable as the claim contains the same limitation of 0 to 0.00005 wt. % HHQ in a packaged beverage. Since the examiner has not demonstrated an HHQ content of 0 to 0.00005 wt. % to be either inherent or obvious, her conclusion that a packaged beverage containing 0 to 0.00005 wt. % of HHQ is also in error and must be reversed.

Claims 2, and 5-7

This embodiment of the claimed invention is directed to a coffee composition and a packaged beverage having no substantial HPLC peak corresponding to HHQ.

As noted above, none of the cited references, either alone or in combination, suggest a composition containing less than 0.00005 wt. % of HHQ. The HHQ content for suggested by the cited art exceeds 0.00005 wt. %. Accordingly, a composition containing an amount of HHQ which exceed 0.00005 wt.% would necessarily **have an HPLC peak** within the range of 0.54 to 0.61 relative to gallic acid due to the presence of an amount of HHQ in excess of 0.00005 wt. %. Thus, the examiner's conclusion that a composition having no substantial HPLC peak corresponding to HHQ to be obvious is in error as there is no evidence to support such a conclusion.

Claims 3 and 8

The rejection of claims 3 and 8 under 35 U.S.C. §103(a) over Stelkens GB 354,942 and Sosuke et al JP 6-315,434 and Schlichter U.S. 3,615,666

This embodiment of the claimed invention is directed to a soluble coffee composition having from 0 to 0.001 wt. % of HHQ.

The examiner has committed reversible error in concluding claims 3 and 8 to be obvious as the examiner has no basis for concluding a content of 0 to 0.001 wt. % of HHQ in a soluble composition, to be obvious.

Schlichter has been cited for disclosing a soluble coffee composition. Column 1 identifies the composition has generally being prepared by extracting roast and ground coffee, concentrating, preferably to at least 50% solubles and drying to provide a dry instant coffee product. Accordingly, a soluble coffee composition would contain non-volatile components in at a concentration which is at least 2x (e.g. at least 50% solubles) relative to the preceding coffee extract.

In the current case, appellants have provided evidence as to the inherent HHQ content of coffee compositions prepared by the methods cited in the art. The embodiment identified by the examiner as forming an obvious coffee composition was to use the processing technique of Stelkens with the activated carbon of Sosuke. Appellants have provided evidence in the form of the Ohminami declaration of March 9, 2010 that such a process produced an HHQ content of the coffee composition of 0.00227 wt.%, a concentration in excess of the claimed content of 0 to 0.001 wt. % in a soluble coffee composition. Thus, the examiner has not proven a content of 0 to 0.001 wt. % of HHQ to be obvious in any composition.

None the less, appellants note the evidence provided in the Ohminami declaration of April 24, 2009 in which a **coffee composition** prepared according to the process of Stelkens had an HHQ content of 0.00112 wt.%, within the claimed concentration of 0 to 0.001 wt.%. However, a coffee composition containing 0.00112 wt.% does not suggest a soluble coffee composition containing only 0 to 0.001 wt. % of HHQ in view of the increase in concentration of HHQ upon formation of a soluble coffee composition from a coffee extract. Certainly, a soluble coffee composition prepared from a coffee composition which already has an HHQ

content of 0.00112 wt. % would have a final HHQ content far in excess of 0.001 wt. %. Thus, the examiner has clearly erred in concluding that a soluble coffee composition having an HHQ content of from 0 to 0.001 wt. % to be obvious.

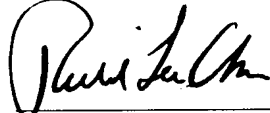
As to the evidence presented in the Ohminami Declaration of September 23, 2009 in which a reproduction of the process of Sosuke provided for a coffee composition having an HHQ content of 0.000948 wt.% and 0.000844 wt. %². Again, this is a concentration of a coffee extract, which is significantly lower than the concentration in a soluble coffee composition.

Thus, in view of the initially high HHQ content in the composition as processed according to Sosuke, a soluble coffee composition having only 0 to 0.001 wt.% HHQ would not have been obvious. The examiner has failed to provide any references to suggest such a low HHQ content in a soluble coffee composition. For this reason, the deficiencies of her rejection do not allow for a conclusion of obviousness and therefore her decision must be reversed.

In view of the errors committed by the examiner, her conclusions as to obviousness are in error and must be reversed.

Respectfully submitted,

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² During the preparation of this appeal, appellants identified an error in Mr. Ohminami's declaration where activated carbon Shirasagi WH2c 42/60 was erroneously identified as derived from corn husk when a coconut husk activated carbon should have been identified.

(viii) Claims Appendix

1. A coffee composition having a hydroxyhydroquinone content of from 0 to 0.00005 wt. %.
2. A coffee composition, characterized in that in analysis by high performance liquid chromatography, the composition has no substantial peak within a range of a relative retention time from 0.54 to 0.61 with respect to gallic acid used as a reference substance.
3. A soluble coffee composition having a hydroxyhydroquinone content of from 0 to 0.001 wt. %.
4. A packaged beverage having, filled therein, a coffee composition having a hydroxyhydroquinone content of from 0 to 0.00005 wt. %.
5. A packaged beverage having a coffee composition filled therein, characterized in that in analysis by high performance liquid chromatography, the composition has no substantial peak within a range of a relative retention time of from 0.54 to 0.61 with respect to gallic acid used as a reference substance.
6. A process for preparing the coffee composition as claimed in claim 1 or 2, which comprises treating an extract of roasted coffee beans with activated carbon.
7. The process according to claim 6, wherein the activated carbon is obtained by activation by a zinc chloride method or steam activation method.
8. A process for preparing the soluble coffee composition as claimed in claim 3, which comprises treating an extract of roasted coffee beans with activated carbon to yield a coffee

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composition and spray drying or freeze drying the resulting coffee composition.

(ix) Evidence Appendix

Ohminami declaration March 9, 2010

Ohminami declaration September 23, 2009

Ohminami declaration April 24, 2009

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FOR: COFFEE DRINK COMPOSITION :

DECLARATION UNDER 37 C.F.R. §1.132

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

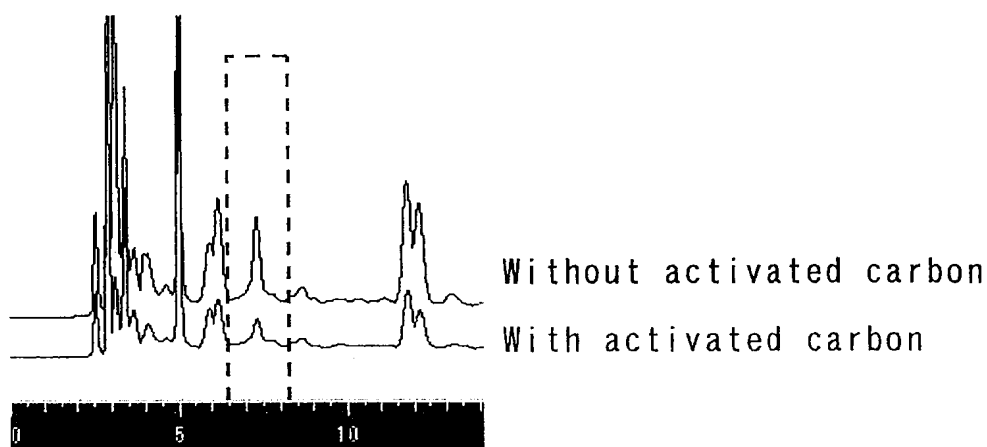
Now comes Mr. Hideo Ohminami who deposes and declares that:

1. I am a graduate of Kyoto Pharmaceutical University and received my master's degree in the year 2001.
2. I have been employed by the Kao Corporation for the past 8 years, as a researcher in the field of organic chemistry.
4. I am a named inventor of the above-identified application.
5. The following experiments were conducted by me or under my direct supervision and control.

10 g of ground Costa-Rican coffee beans (medium roasted, medium grind) were intimately mixed with 1.25 g of activated carbon (Shirasagi WH2c 42/60(coconut husk 1-5 Angstrom of pore size)). 25 mL of boiling water was poured onto the mixture and after 5 minutes of standing still, coffee beans and activated carbon were removed by filtration. The

hydroxyhydroquinone (HHQ) and chlorogenic acid contents were determined by HPLC as follows:

	Without activated carbon (reference)	With activated carbon
Content of HHQ	0.00399 wt%	0.00227 wt%
HHQ residual ratio	100 %	56.9 %
Content of chlorogenic acid	0.72271 wt%	0.51385 wt%
Chlorogenic acid residual ratio	100 %	71.1 %
Ratio of HHQ / chlorogenic acid	0.55 %	0.44 %



I declare under penalty of perjury under the laws of the United States of America that the foregoing is believed to be true and correct. 28 USC 1746(1)

Hideo Ohminami
Hideo Ohminami

Mar. 3 2010
Date

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4. I am a named inventor of the above-identified application.
5. The following experiments were conducted by me or under my direct supervision and control.

40 g of ground coffee beans (medium roasted) were subjected to drip extraction with hot water. The extract was further passed through an adsorbent of activated carbon (corn husk 1-5 Å). The HHQ and chlorogenic acid contents were determined by HPLC as follows:

	A	B	C
Coffee beans	Moca (medium roasted coffee) 40 g		
Volume of water and temperature	550 mL, 95°C		
Extraction time	3 min		
Activated carbon Shirasagi WH2c 42/60	0 g	5 g	10 g
Content of HHQ	0.001063 %	0.000948 %	0.000844 %
Content of chlorogenic acid	0.12480%	0.12500%	0.12550%
Ratio of HHQ/chlorogenic acid	0.85%	0.76%	0.67%
Amount of extracted coffee	470.0 mL	460.0 mL	455.0 mL

I declare under penalty of perjury under the laws of the United States of America that the foregoing is believed to be true and correct. 28 USC 1746(1)

Hideo Ohminami
Hideo Ohminami

Sep. 11, 2009
Date

DOCKET NO: 293717US0PCT

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1. I am a graduate of Kyoto Pharmaceutical University and received my master's degree in the year 2001.
2. I have been employed by the Kao Corporation for the past 7 years, as a researcher in the field of organic chemistry.
3. The following experiments were conducted by me or under my direct supervision and control.

10 g of ground Costa-Rican coffee beans (medium roasted, medium grind) were intimately mixed with 1.25 g of activated carbon (Wako Pure Chemicals, Ltd, median particle size 0.3 mm (residue 0.3 mm max 40%, 0.3 to 0.063 mm min 50%, pass 0.063 mm max 10%). 25 mL of boiling water was poured onto the mixture and after 5 minutes of standing still, coffee beans and activated carbon were removed by filtration. The hydroxyhydroquinone (HHQ) and chlorogenic acid contents were determined by HPLC as follows:

HHQ concentration:	0.00112 wt. %
Chlorogenic acid concentration:	0.46549 wt. %
HHQ/chlorogenic acid ratio	0.0024

I declare under penalty of perjury under the laws of the United States of America
that the foregoing is believed to be true and correct. 28 USC 1746(1)

Hideo Ohmura

Apr. 10. 2009
Date

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(x) *Related Proceedings Appendix*

Contemporaneous appeal of U.S. 10/589,609